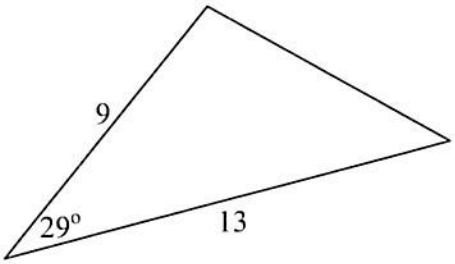
Name:_____ Date:_____

Algebra 2/Trig: The Ambiguous Case

DO NOW: (Review) Find the missing side:

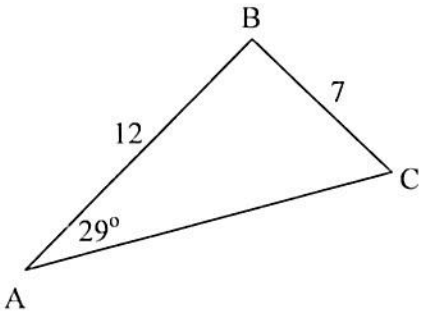


***If the problem involves all 3 sides and one angle, apply the _____!

When something is **ambiguous**, it is mysterious and unclear…

For today, round all angles to the nearest degree.

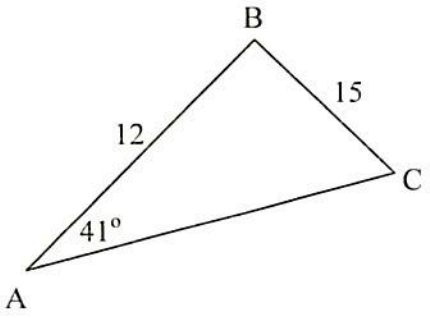
1) In ΔABC, find $m\angle C$.



a] How many angle solutions did we find?

b] Do both angles **make sense** in this context?

2) In ΔABC, find $m\angle C$.

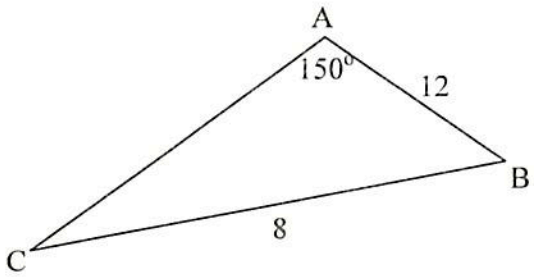


a] How many angle solutions did we find?

b] Which one actually **makes sense**?

c] Why doesn't the other answer make sense?

3) In ΔABC, find $m\angle C$.

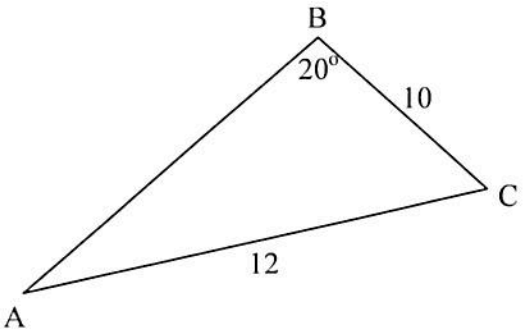


a] How many angle solutions did we find?

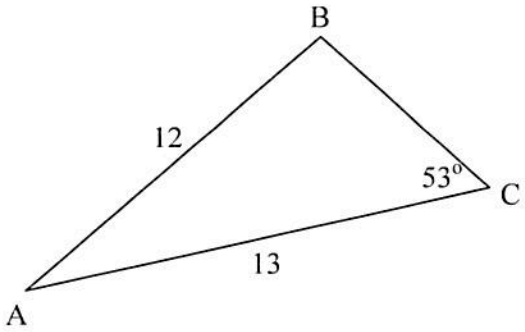
b] Do either of our answers make sense? Explain.

When finding a missing angle of a triangle using the law of sines, we can get 0, 1, or 2 answers. For this reason, we call this situation **the ambiguous case**.

4) If $a = 10$, $b = 12$, and $m\angle B = 20°$, how many possible unique triangles can be constructed?



5) If $b = 13$, $c = 12$, and $m\angle C = 53°$, how many possible unique triangles can be constructed?



6) If $a = 8$, $c = 11$, and $m\angle A = 140°$, how many possible unique triangles can be constructed?

7) If $a = 12$, $c = 15$, and $m\angle A = 52°$, how many possible unique triangles can be constructed?

8) If $b = 13$, $c = 9$, and $m\angle B = 120°$, how many possible unique triangles can be constructed?

9) If $b = 24$, $a = 17$, and $m\angle B = 47°$, how many possible unique triangles can be constructed?

10) If $a = 38$, $c = 40$, and $m\angle A = 113°$, how many possible unique triangles can be constructed?

11) If $a = 8$, $c = 10$, and $m\angle A = 52°$, how many possible unique triangles can be constructed?

12) If $b = 23$, $c = 15$, and $m\angle B = 108°$, how many possible unique triangles can be constructed?

13) If $c = 21$, $b = 24$, and $m\angle C = 127°$, how many possible unique triangles can be constructed?

14) If $a = 5$, $c = 9$, and $m\angle A = 47°$, how many possible unique triangles can be constructed?